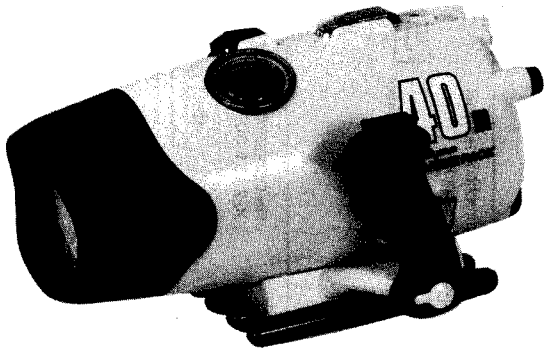
MPK-F40/F340

SERVICE MANUAL

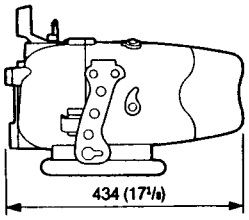
US Model
Canadian Model
MPK-F40
AEP Model
UK Model
E Model
Australian Model
MPK-F340

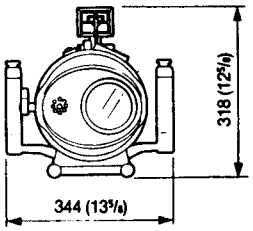


Handycam

SPECIFICATIONS

Material	Plastic (ABS and PC), glass
Waterproofing	O-ring, 3 buckles
Usable depth	Up to 40 meters (132 feet)
Power sources	One battery pack NP-77 or NP-55
Underwater microphone	Peizoelectric microphone
Controllable function	Power on/off, recording start/stop
Dimensions	Unit: mm (inch)





Weight	Approx. 12 kg (26 lb 7 oz)
Accessories supplied	Pedestal for CCD-F40/CCD-F340E (1) Pedestal for CCD-SP7/CCD-SP5E (1) Pedestal for CCD-V9/CCD-V90E (1) Remote control connecting cord with stereo mini-mini plug (1) Remote control connecting cord with 5-pin plug (1) Wide conversion lens (1) Sports finder (1) Cushion (for CCD-V9/CCD-V90E) (1) Spare O-ring (1) Spare waterproof gasket (1) Grease (1)

Features

This marine pack allows an 8 mm video camera recorder listed below to be used under water.

Countries	Compatible models
U.S.A. and Canada	CCD-F40, CCD-V9, CCD-SP7
Others countries	CCD-F340E, CCD-V90E, CCD-SP5E CCD-F340, CCD-SP5

- Usable at a depth as deep as 40 meters (132 feet)
- One-hand operation under water. Once the focus and white balance are set on land, power on/off and recording start/stop are the only operations to be done under water.

MICROFILM

HANDYCAM MARINE PACK

SONY®

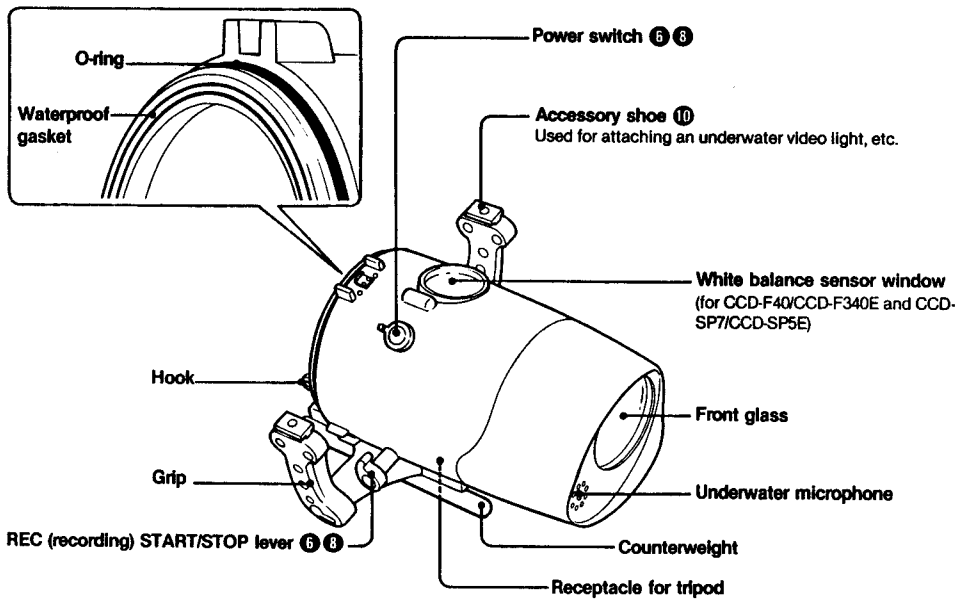
SECTION 1
GENERAL

This section is extracted from instraction manual.

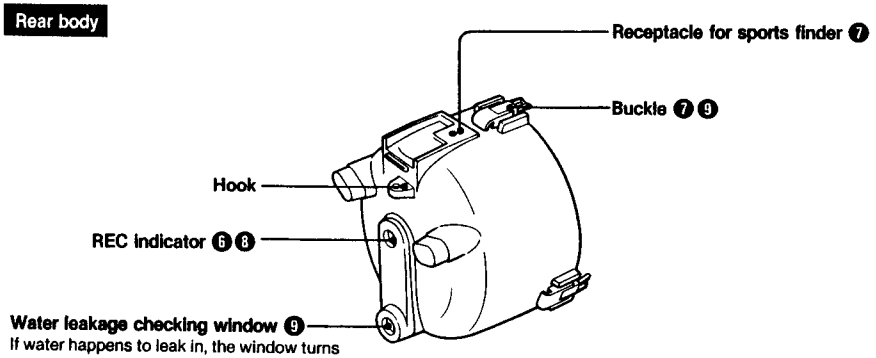
Components of the Marine Pack

For further details, refer to the page numbers next to each item.

Front body

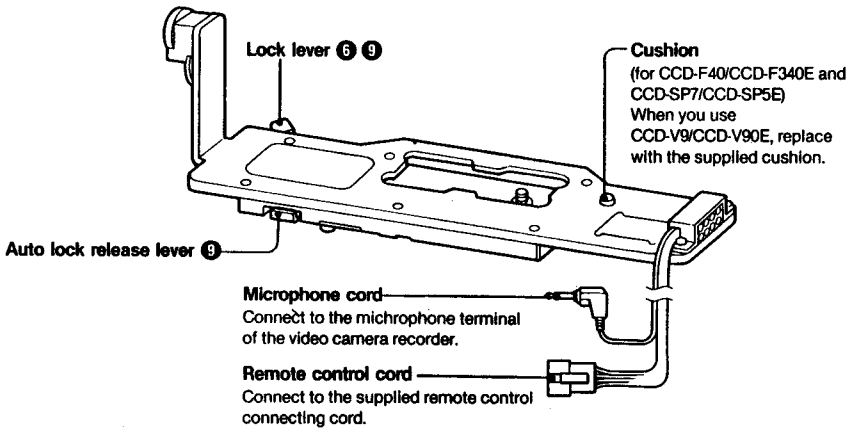


Rear body


Receptacle for sports finder 7
Buckle 7 9
Hook
REC indicator 6 8
Water leakage checking window 9
If water happens to leak in, the window turns red and the " / " indication appears in the window.

Components of the Marine Pack

Camera mount


Lock lever 6 9
Cushion
(for CCD-F40/CCD-F340E and CCD-SP7/CCD-SP5E)
When you use CCD-V9/CCD-V90E, replace with the supplied cushion.
Auto lock release lever 9
Microphone cord
Connect to the michrophone terminal of the video camera recorder.
Remote control cord
Connect to the supplied remote control connecting cord.

Accessories supplied

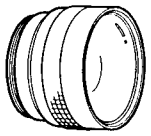
Pedestal

For CCD-F40/CCD-F340E	For CCD-SP7/CCD-SP5E	For CCD-V9/CCD-V90E
X-2181-606-1	X-2181-607-01	X-2181-608-1

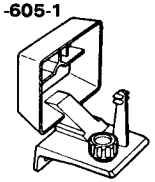
Remote control connecting cord

For CCD-F40/CCD-F340E and CCD-SP7/CCD-SP5E	For CCD-V9/CCD-V90E
Stereo mini-mini plug	5-pin plug
1-574-256-11	1-574-255-11

Wide conversion lens (magnifying power: × 0.6)
2-181-669-01



Sports finder
X-2181-605-1



Cushion (for CCD-V9/CCD-V90E)
2-181-680-01 (CCD-F40, F340, SP5, SP7)
2-181-680-11 (CCD-V9, V90)

Spare O-ring (black)
2-181-670-01

Spare waterproof gasket (white)
2-181-617-01

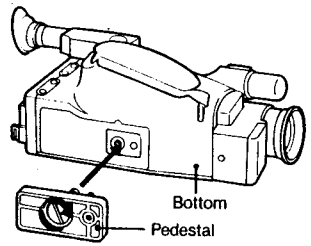
Grease
2-115-921-01

Preparation before recording

1 Install the video camera recorder on the camera mount.

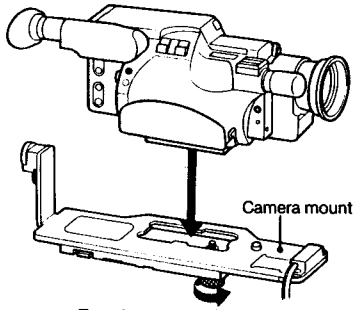
1 **Install an NP-77 (or NP-55) battery pack (optional) to the video camera recorder.** (Refer to the instruction manual of the video camera recorder.)

2 **Install the specific pedestal on the video camera recorder.**



Turn the screw with a coin, etc.

3 **Install the video camera recorder on the camera mount.**



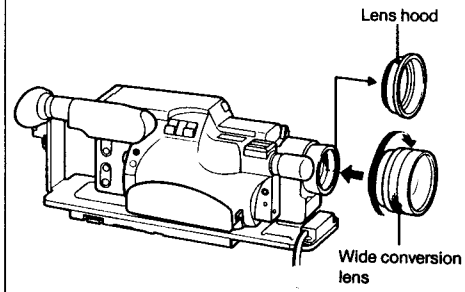
Turn the screw with a coin, etc.

When you use a CCD-V9/CCD-V90E video camera recorder

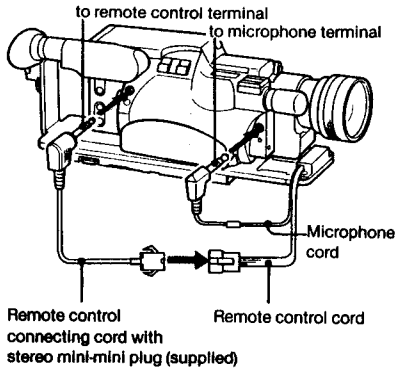
Remove the lens cover before installing the video camera recorder on the camera mount.

4 **Remove the lens hood of the video camera recorder and install the wide conversion lens.**

- Remove a lens cap from the video camera recorder.
- Remove a filter, such as a protector, if it is in use.
- By installing the wide conversion lens, the shooting coverage becomes wider, although the subject is shot smaller at 60 percent.



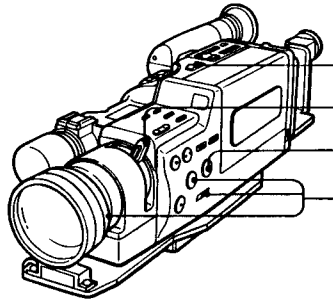
5 **Connect both microphone and remote control cords to the video camera recorder.**


to remote control terminal
to microphone terminal
Microphone cord
Remote control connecting cord with stereo mini-mini plug (supplied)
Remote control cord

When you use CCD-V9/CCD-V90E video camera recorder

Use the remote control connecting cord with a 5-pin plug.

2 Preset the video camera recorder.



Set power switch to CAMERA.

Set zoom lever to WIDE.

Set shutter speed at 1/60 seconds (normal speed).

1 **Set the AUTO LOCK switch to RELEASE, and press the FOCUS button (manual focus mode).**

2 **Set focus ring at ∞.**

When you use CCD-V9/CCD-V90E video camera recorder

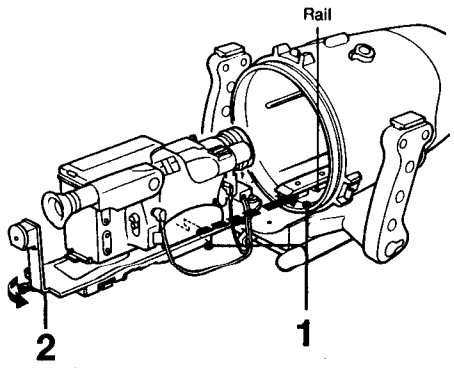
	White balance
Normally	OUTDOOR
Night diving	INDOOR

3 Install the video camera recorder in the front body.

The transport cover should be removed.

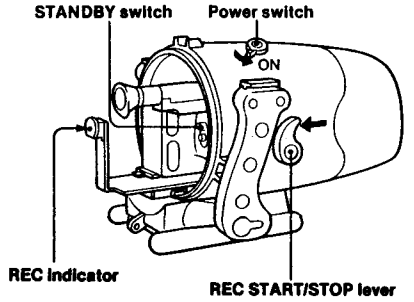
1 **Insert the video camera recorder along the rail until it clicks.**

2 **Push the lock lever in the direction of the arrow.**



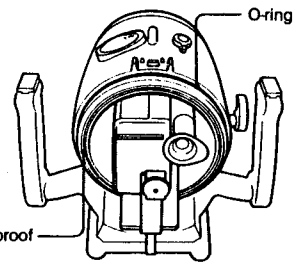
3 **Press up the STANDBY switch of the video camera recorder.**

4 **Make sure that the REC indicator lights up when the power switch of the marine pack is set to ON and the REC START/STOP lever is pressed in the direction of the arrow.**

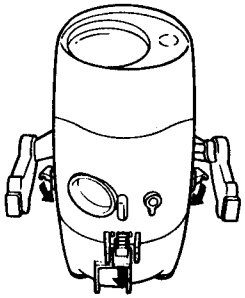


4 Joint the front and rear bodies.

1 **Check that the O-ring and waterproof gasket are all right, and grease them lightly.** (See page 11.)

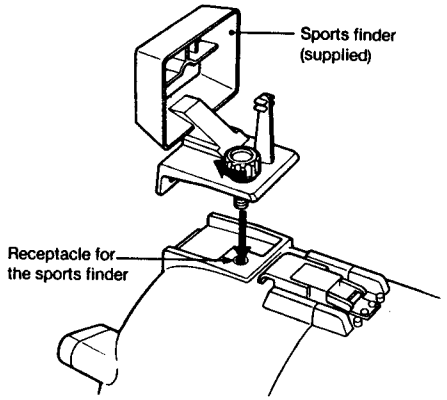


2 **Press down the front body and fasten the three buckles securely.**



5 Attach the sports finder.

The sports finder allows you to estimate the approximate shooting coverage. (See page 8.)
Turn the screw on the sports finder to secure it to the marine pack body.



The marine pack is now ready for recording.

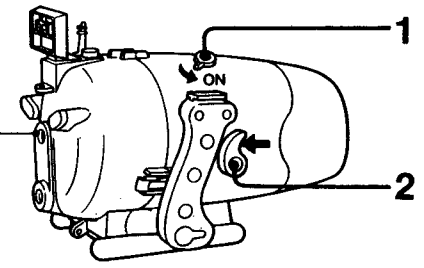
Operation

Starting/Stopping Recording

1 **Set the power switch to ON.**

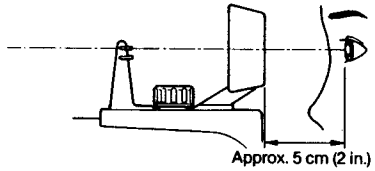
2 **Press the REC START/STOP lever momentarily toward you.**
To stop recording, press the REC START/STOP lever again.
The recorder will enter standby mode.

REC indicator
Lights up in red during recording.

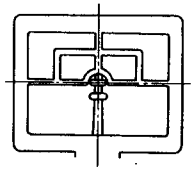
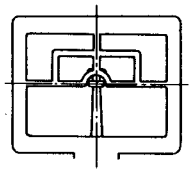


Note If you do not record for a long period of time, set the power switch to OFF.

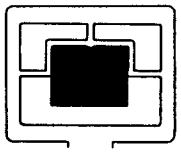
Using the Sports Finder



The scene within the finder frame will be shot.
Observe the subject through the sports finder and align the horizontal bar at the center of the finder with the upper or lower horizontal bar on the sight.

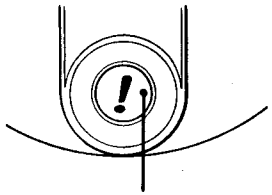
For shooting distance of more than 5 m (16 feet)	For shooting distance of approx. 1 to 2 m (3 to 7 feet)
	
Align with the upper bar of the sight.	Align with the lower bar of the sight.
For shooting distance of 2 to 5 m (7 to 16 feet), set the center bar of the finder between the upper and lower bars on the sight.	

When the wide-conversion lens is removed
The scene within the inner frame on the sports finder will be shot.



Checking Water Leakage

If water happens to leak in, the water leakage checking window turns red and the " ! " indication appears in the window. (The window will return to white as it gets dry. To dry it faster, wipe water drops with tissue paper or cloth.)

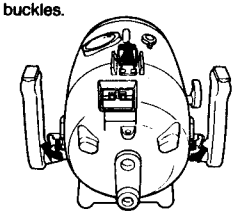


In such a case, remove the marine pack from the water as soon as possible, keeping it horizontal. Be sure to follow the safety rules for diving.
Check the cause of the leakage. If the video camera recorder gets wet, take it to the nearest Sony service facility immediately.

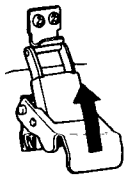
Removing the Video Camera Recorder

1 Open the marine pack.
Before unfastening the buckles, wash the marine pack with fresh water and dry it with a soft cloth. (See page 10.)

1 Unfasten the three buckles.



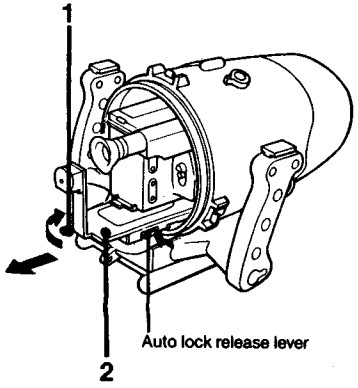
2 Set the end of a buckle to the rear of the catch and press the buckle plate in the direction of the arrow.



2 Remove the video camera recorder from the front body.

1 Unlock the camera mount by pressing the lock lever in the direction of the arrow.

2 While pressing the auto lock release lever, pull the video camera recorder out of the front body.



Hints on Underwater Recording

Recording under water is different from recording on land because it is affected by the clarity and depth of the water, light input and objects around the subject. The following are hints for good recording under water.

Color under Water

Water absorbs light, especially red light so that subjects in deep water are seen as bluish. The color is also affected by the clearness of the water.

Best Time for Recording

The best recording time is from 10 a.m. to 2 p.m. When the sun is high in the sky, optimum results can be obtained. To record at night, use powerful light.

Subject Size under Water

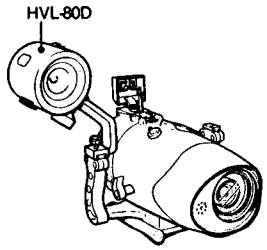
Since the refractive index under water is higher than that in air, an object is visible by 1/4 more closely, and therefore larger, under water than in air. This phenomenon affects the lens on the video camera recorder as well as the human eye. It means that a lens with a wide angle of field is effective under water. This is why a wide-conversion lens is supplied with the marine pack.

Camera Work in Slow and Stable Motion

When recording, keep your body stable. An unstable shot will be magnified on the TV screen.
Move the video camera recorder as slowly as possible. A subject such as a fish moves itself and enables you to make an attractive program without moving the recorder.

Underwater Video Light

In a deep place or under rocks where direct sunlight does not reach, recording with artificial lights is recommended. Attach the Sony HVL-80D underwater video light or equivalent to the right or left accessory shoe on the marine pack.



Maintenance

After recording

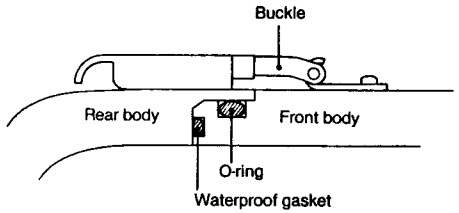
After recording in the sea, submerge the marine pack with the buckles fastened thoroughly in fresh water for a while so that the sea water is removed. Then wash it with fresh water and dry it with a soft cloth. Clean the video camera recorder and the inside of the pack with a dry soft cloth.
Do not use any type of solvent, such as alcohol or benzine for cleaning, as this might damage the finish. Be sure to perform the above procedure every time the marine pack is used in the sea.
If the sea water remains on the marine pack, the metal parts may get rusty or the operation lever becomes hard to move.

When storing the marine pack

Grease the O-ring and waterproof gasket, put them in the grooves correctly and put the transport cover. Close the pack without fastening the buckles and place it in a cool place.
Avoid storing the marine pack in a hot or very cold place, in a place subject to direct sunlight or excessive dust, or together with naphthalene or camphor. This will damage the marine pack.

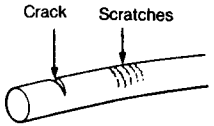
Notes on the O-ring and Waterproof Gasket

The O-ring and waterproof gasket assure the waterproof function of the marine pack. To maintain waterproof integrity, use them correctly. Incorrect operation may cause water to leak in.



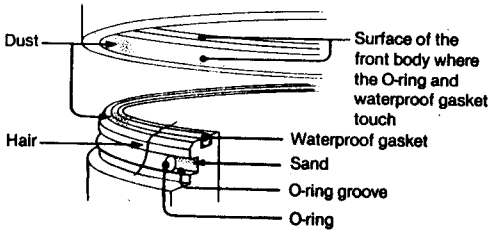
Check that there are no scratches or cracks.

Scratches or cracks on the O-ring or waterproof gasket may cause water to leak in. If there are any, replace the damaged O-ring or gasket with a new one.
Do not remove the O-ring or gasket from the groove with a metal tool or a tool with a sharp point.



Remove any dust, sand or hair from the waterproof gasket.

Check there is no dust, sand or hair on the O-ring or waterproof gasket, or in the groove or on the surface where it touches. If there is, remove them completely, or the O-ring or gasket and the surface of the marine pack body may be damaged and water may leak in.

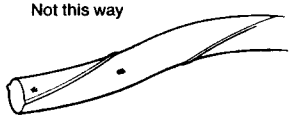


Grease the O-ring and waterproof gasket.

The grease protects the O-ring and gasket from wear.
After checking that there are no cracks or dust on the O-ring and gasket, grease them using a finger. During greasing, recheck that there are no cracks or dust.
Never use cloth or paper for greasing because the fibers may cling.

Do not twist the O-ring and waterproof gasket.

Put the O-ring and gasket in the grooves evenly. Never twist them.



Do not trap the O-ring and waterproof gasket with the marine pack.

When jointing the marine pack, be careful not to trap the O-ring or gasket between the front and rear bodies. If this happens, not only will the O-ring or gasket be damaged, but also water may leak in.

Storage

Store the supplied spare O-ring and waterproof gasket in a cool place, packed in the original carton. Be sure to avoid the following:
- Exposing to direct sunlight.
- Placing a heavy object on the O-ring or gasket.
- Folding the O-ring or gasket.

Useful life of the O-ring and waterproof gasket

It depends upon the maintenance and the length of use, but we recommend changing it every one or two years.
Use ACC-804 marine pack maintenance kit (optional) to replace.

Precautions

On video camera recorder

Be careful not to expose the equipment to salty air nor to drip sea water on the equipment.
- Avoid opening the marine pack on the sea or at the seaside. Preparations such as installing and checking the equipment should be made in a place with low humidity and no salty air.
- When a video camera recorder and a monitor TV are to be used on the sea or at the seaside for a long period of time, we recommend that they are checked periodically by a Sony service facility.
- If the equipment becomes wet, take it immediately to the nearest Sony service facility for preventive maintenance.

On the marine pack

- If the marine pack is put in the water after being opened and jointed in a place with high temperature and high humidity, moisture condensation may occur, causing the glass to fog up and perhaps damaging the equipment.
- The waterproof integrity of the marine pack is maintained by the O-ring and waterproof gasket, and the grooves and surfaces where they touch. Be especially careful not to damage or deform those areas.
- Before jointing the marine pack, check these areas to see that there are no cracks, dust, sand, hair, etc., and that the O-ring and waterproof gasket are lightly greased.
- Do not leave the marine pack under direct sunlight for a long period of time, otherwise the temperature in the pack may rise and the equipment in the pack may be damaged.
- If you cannot avoid leaving the marine pack under direct sunlight, be sure to cover the pack with a towel or other protection.
- Do not throw the marine pack into the water, lower it gently into the water.

On recording under water

- We recommend you to check before diving that the equipment operates correctly and there is no water leakage at a depth of about one meter (3 feet).
- Be sure to follow the safety rules for diving such as diving period, depth, etc.

When opening the marine pack

To prevent the video camera recorder from getting wet, take care on the following points.
- Dry the marine pack well.
- Soak up any water between the front and rear bodies with a towel.
- Make sure you are dry. Take care that no water drops from your wet suit.

On transportation

- To transport the marine pack for a long distance, remove the video camera recorder or it may be damaged.
- To transport the marine pack by air or by car, remove the video camera recorder from the pack and repack the marine pack in the original shipping carton with the associated packing material.
- To move the marine pack by car with the video camera recorder in position, use cushioning so that shocks or vibration are avoided as much as possible. Be sure to secure the pack firmly so it will not turn over.

Sony does not accept liability for damage to the video camera recorder, battery, etc. in the marine pack and for the cost of recording if water leakage occurs caused by incorrect operation.

1. Concerning Defects

Marine Pack defects are classified as the three following types.

1) **Operational defects**
   This type mainly involves malfunctions caused by electrical circuit or parts defects. Repair is the same as for normal products.
2) **Damaged and missing parts**
   Waterproofing is sometimes affected by the locations of defects and symptoms. Before making repairs, always use the check list to check the type of defect.
   Note : Refer to pages 9 and 10 for the check list.
3) **Water leaks**
   After the discovery of a defect or after making repairs, it is necessary to perform either a hydraulic pressure test or simple water leak test using a water tank.

2. Concerning Water Leaks

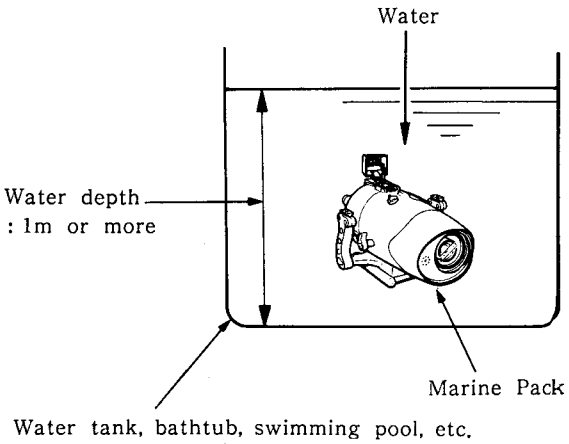
To ensure waterproofing, O-rings are used in the holes in the Marine Pack housing for openings, shafts, display windows and the front glass. Water leaks are possible in any of these locations but the conditions under which water leaks occur differ for the openings and the other parts.

1) **Water leaks at openings**
   Openings are waterproofed using O-rings compressed by the force of the buckle spring.
   Near the surface of the water, where little water pressure is applied to Marine Pack, the force of the buckle alone provides sufficient waterproofing. As the water pressure applied to Marine Pack increases at greater depths, however, the force applied to the O-rings increases due to the water pressure to increase the waterproofing.
   Because of this, due to the type of waterproofing construction used, opening water leaks are more prone to occur in shallow water (approx. 2 meters) than in deep water.
   Also, since there are is a gap between the front and rear housings, sand and dirt tend to enter and adhere to the O-ring in shallow water. When the cover is opened, this sand and dirt can then enter under the O-ring and cause a water leak the next time Marine Pack is used.
   This, most water leaks in the openings are the result of adhered dirt, sand, hair and other foreigh matter as well as O-ring and housing damage due to careless handing.
2) **Water leaks at other openings**
   Parts where there are holes in the housing (shafts, display window, front and rear glass) are constructed with O-rings mechanically compressed by screws and nuts.
   Due to the construction, these places cannot be reached with the hands : therefore, the waterproofing is more secure than that of the openings.
   The causes of water leaks are damage of the parts compressing the O-rings, loosening of the screws and nuts fastening the parts and improper reassembly.

3. Water Leak Check Methods

After the discovery and repair of a water leak, it is necessary to perform a hydraulic pressure test and water leak test using a water tank.

1) **Opening water leak check method**
   As was mentioned above, due to the construction, water leaks in openings are more prone to occur in shallow water than in deep water. Consequently, a simple water leak test using a water tank is sufficient in many cases, without performing a hydraulic pressure test.
   ***Water leak test**
   In this method, Marine Pack immersed in a tank filled with water and checked for water leaks.
   Marine Pack should be left immersed in the water tank (or bathtub, swimming pool, etc.) for at least 15-20 minutes with the covers closed. The water depth should be at least 1 meter.



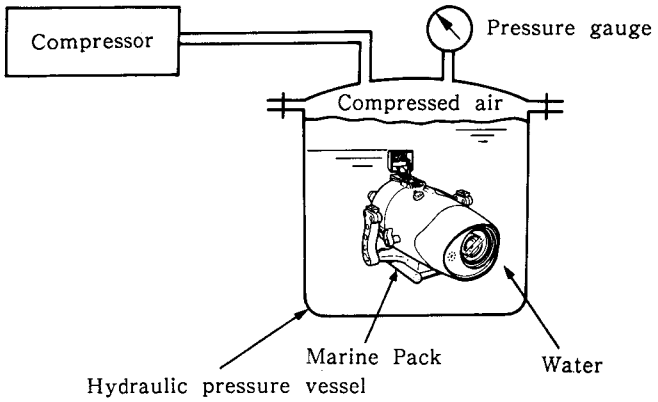
2) **Water leak check methods for other waterproofed locations.**

In addition to water leaks caused by damaged parts and loose screws, there are also water leaks at other waterproofed locations which cannot be detected with a water leak test : therefore, the hydraulic pressure test must be used.

＊＊Hydraulic pressure test

In this test, Marine Pack is immersed in a water tank called a hydraulic pressure vessel, pressure is applied using compressed air and checks are made for water leaks and the ability to withstand water pressure is tested.

Extreme pressure is applied to Marine Pack underwater. Water leaks may occur when this pressure is first applied. In such cases, the water leak check must be made using the hydraulic pressure test with a hydraulic pressure vessel.



4. Causes of Water Leaks (excluding parts damage)

- **Water leaks in openings**

1) When the covers have been closed with sand, dirt and hair adhered to the O-rings, O-ring grooves, housing O-ring contact surface or waterproof packing.
2) When the cover is closed with an O-ring out of its groove or a cord is caught in the cover.
3) When an O-ring is damaged or cracked (aging).
4) When there is a long scratch which crosses the housing O-ring contact surface.
5) When a cover is not tightly closed due to a defective buckle.

- **Water leaks at other waterproofed locations**

6) When there are scratches on the surfaces of the parts which compress the O-rings.
7) When the Parts which compress are loose.
8) When tightening with sand, dirt and hair adhered to an O-ring or part which compresses the O-ring.
9) When an O-ring has not been installed.

Causes 1)-5) and 9) above can be discovered relatively easily using the water leak test described above.

5. Water Leak Repair Methods

- **Relatively light scratches on O-ring contact surfaces can often by repaired by polishing.**

Caution should be exercised concerning the following points.

1) Only extermely light scratches can be repaired.
2) Use number 600-1000 waterproof sandpaper for repairs and apply water while polishing.
3) Polish the scratch area smoothly using care not to create local indentations.
4) Do not use putty to make repairs since such repairs will fail under water pressure.

- **Checks and cautions**

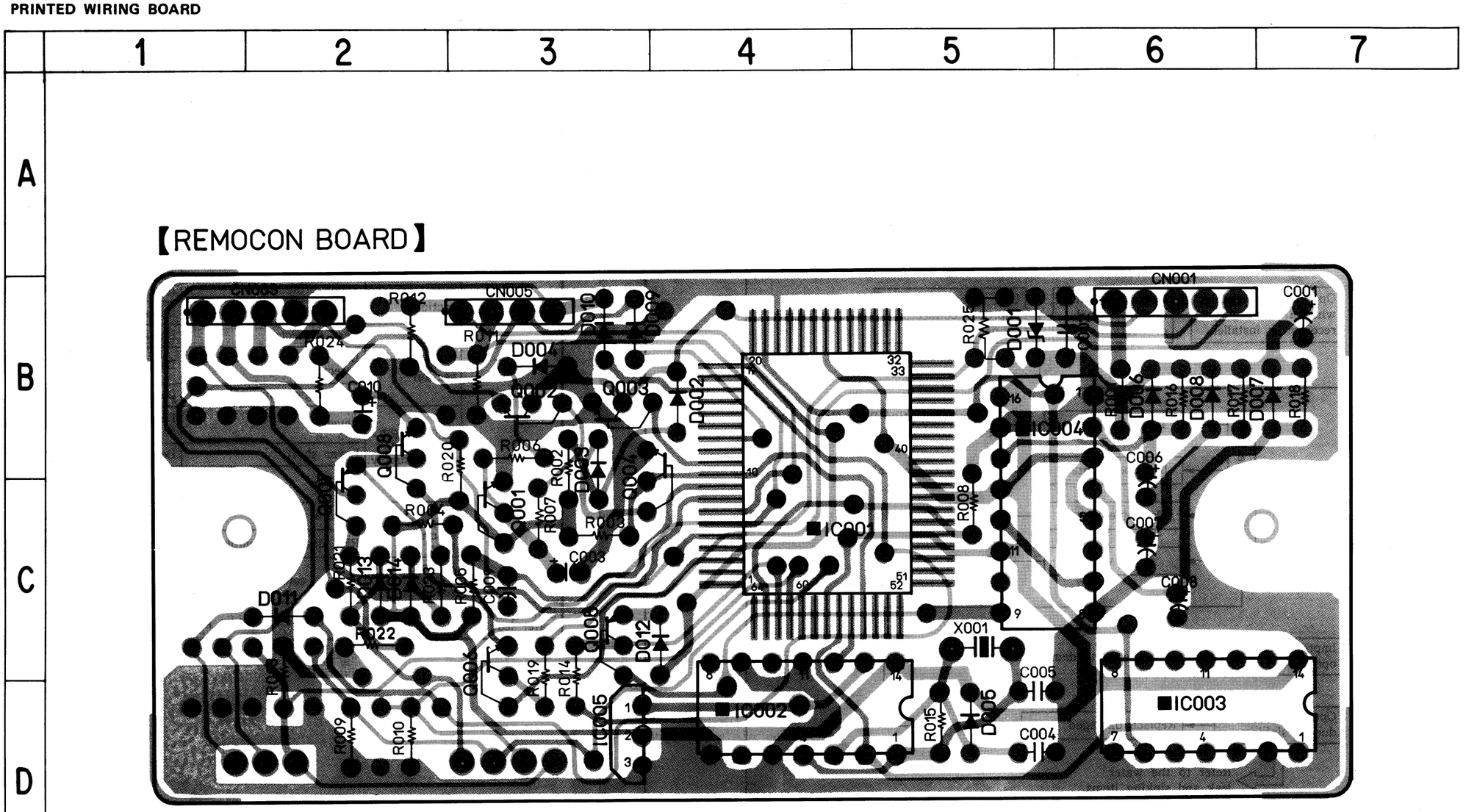
1) Make sure that there are no scratches on the housing O-ring contact surfaces.
2) Make sure that there are no scratches or cracks in the O-rings.
3) Always coat the O-rings with grease by hand and make sure that the O-rings are not twisted when installed.

SECTION 2
DIAGRAMS

PRINTED WIRING BOARD

SEMICONDUCTOR LOCATION

Ref.No.	Location
IC001	C-4
IC002	D-4
IC003	D-6
IC004	B-5
IC005	D-3
Q001	C-3
Q002	B-3
Q003	B-3
Q004	B-3
Q005	C-3
Q006	C-3
Q007	C-2
Q008	B-2
D001	B-5
D002	B-4
D003	B-3
D004	B-3
D005	D-5
D006	B-6
D007	B-7
D008	B-6
D009	B-3
D010	B-3
D011	C-2
D012	C-3
D013	C-2
D014	C-2



Note:

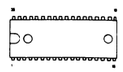
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ⊗ : Through hole.
- ■ : Pattern from the side which enables seeing.
- ■ : Pattern of the rear side.
- ▮ : parts mounted on the conductor side.

Semiconductors Lead Layout

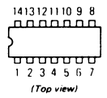
2SA1115
DTA144ES
DTC144ES

2SC2785

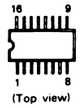
S-8054ALB



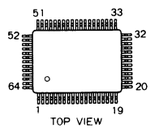
TC4024BF
TC4069UBP



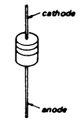
TC4539BF



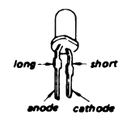
μPD7503G



1SS119
RD5.1ES-B1

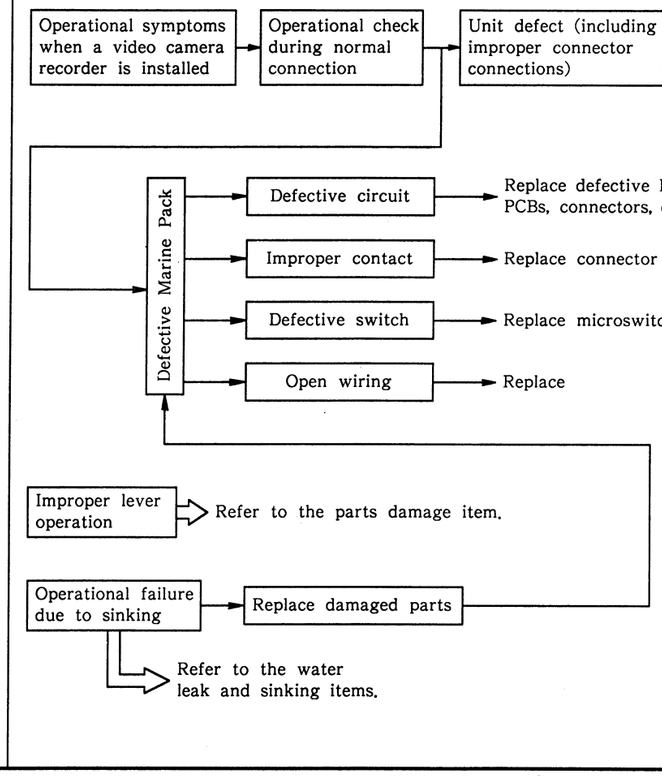


TLR123

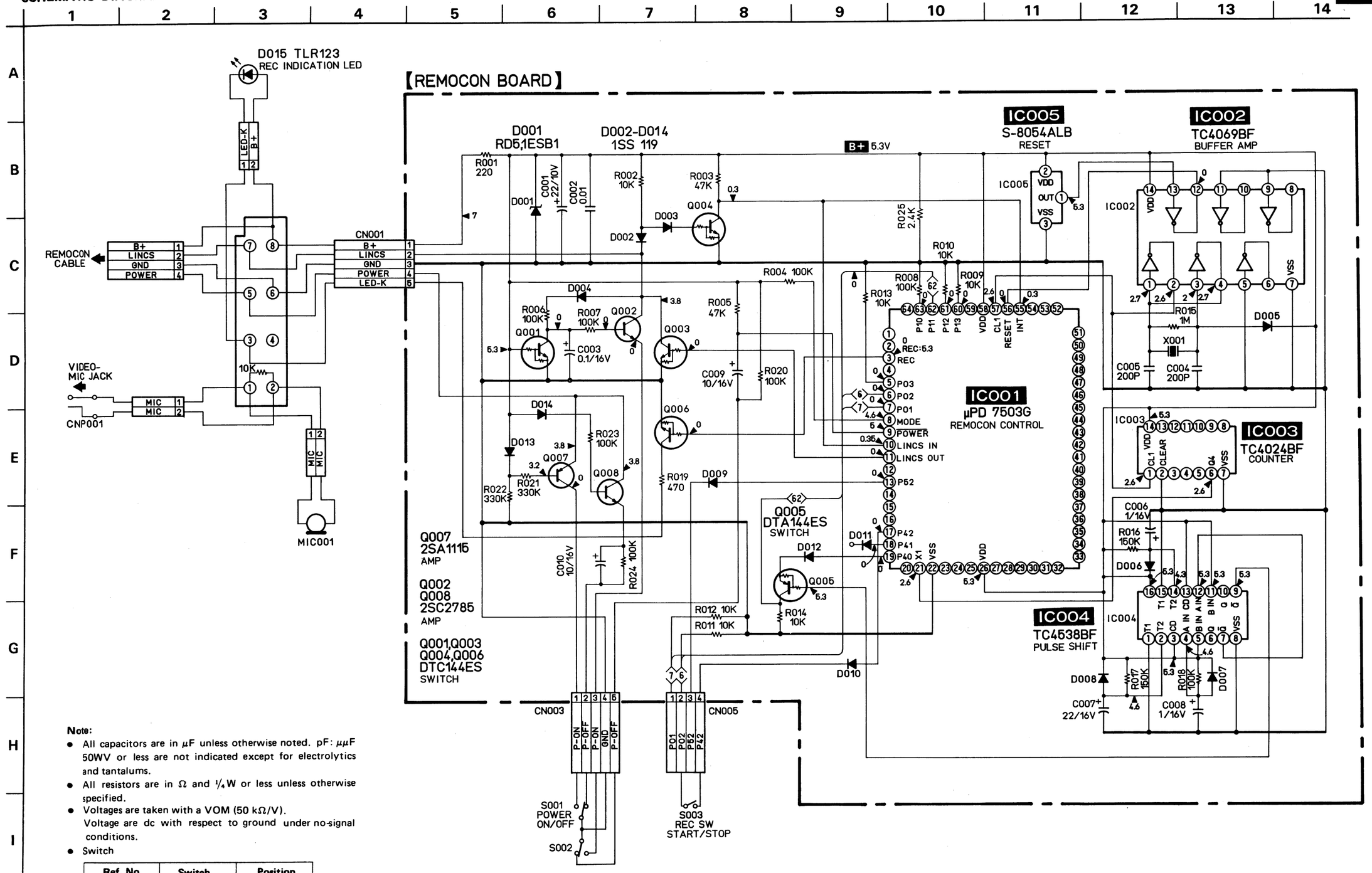


6. Repair Location and Hydraulic Pressure Test

When a defect is discovered or a repair is made at a location related to the waterproofness of Marine Pack, the hydraulic pressure test must be performed.
Repairs at locations which require the hydraulic pressure test, and the hydraulic pressure test itself, are performed at the factory : therefore, always check the type of defect using the check list before making repairs.

Type of defect	Defect location and repair method	Hydraulic pressure test
Improper operation		Unnecessary

Type of defect	Defect location/symptom			Repair method	Hydraulic pressure test
Parts damage	Housing related	Exterior part damage	Scratch	Replace part	Necessary
		Waterproofing O-ring	Light damage	Polish using waterproof sandpaper	Necessary
			Heavy damage	Replace part	
		O-ring	Scratch, aging	Replace part (life : 2 years)	Unnecessary
		Waterproofing packing	Scratch, aging	Replace part	Unnecessary
		Buckle (including mounting screw)	Damege or coming off	Replace part (repair housing when screws are affected)	Unnecessary
		Underwater microphone	Damage	Replace part	Necessary
	Grip area	Deformation, damage	Light damage	Replace part	Unnecessary
			Heavy damage	Housing repair (overhaul mounting section)	Necessary
	Front glass section	Front protector	Damage, loss	Replace part	Unnecessary
		Front glass	Damage	Replace part	Necessary
	Display window section	Rear protector	Damage, loss	Replace part	Unnecessary
		LED window, water leak detector window	Damage	Replace part	Necessary
		Wide-angle conversion lens	Damage, loss	Replace part	Unnecessary
	REC START/ STOP and power supply lever area	Lever	Damege or coming off	Replace part	Necessary
		Lever shaft	Deformation	Replace part	Necessary
		Bearing	Deformation, scratch	Replace part	Necessary
	Video camera recorder mounting base area	Camera mount	Damage	Replace part	Unnecessary
		REC display assembly	Damage	Replace part	Unnecessary
	Remote control section	Remote control case	Damage	Replace part	Unnecessary
Sinking due to water leak	Determine cause using the hydraulic pressure test.			Repair the defect or replace the part.	Necessary



Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Voltages are taken with a VOM (50 kΩ/V). Voltage are dc with respect to ground under no-signal conditions.
- Switch

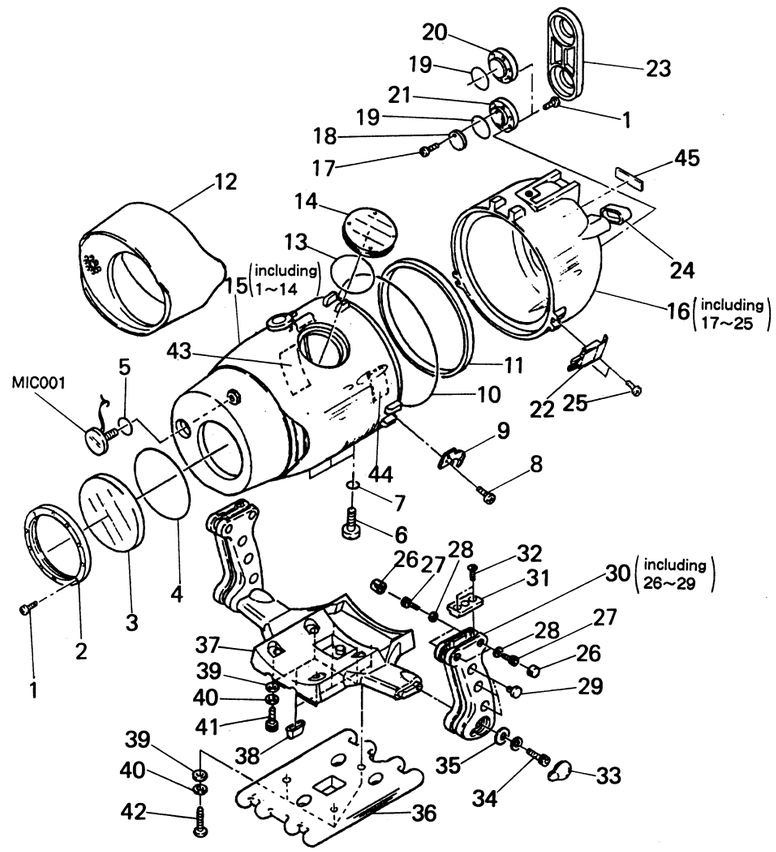
Ref. No.	Switch	Position
S001	POWER	OFF
S002	POWER	OFF
S003	REC SW	OFF

SECTION 3
EXPLODED VIEWS

NOTE :

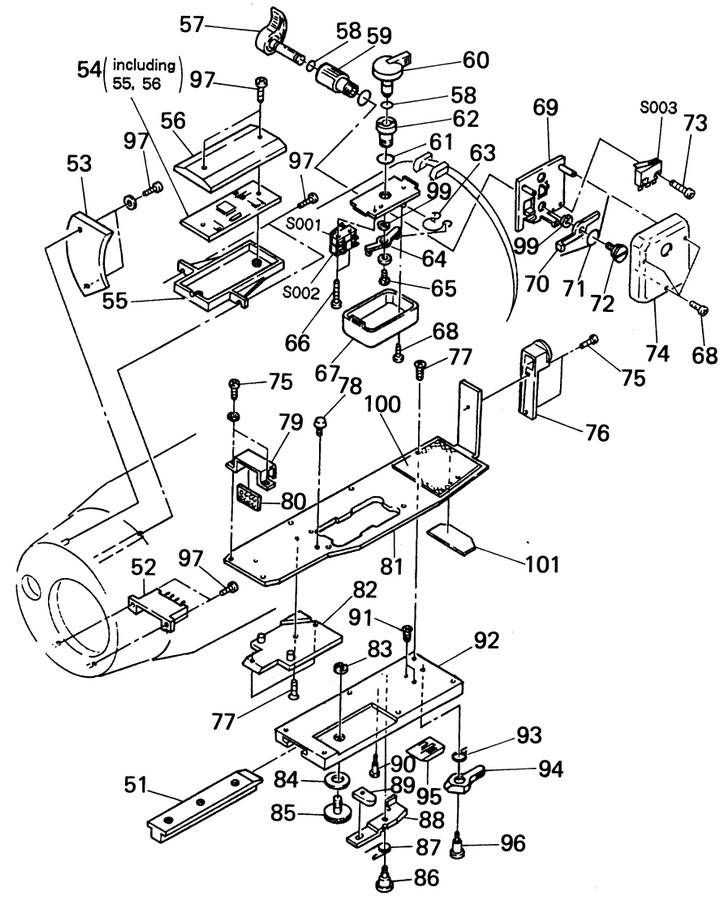
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

(1)



No.	Part No.	Description	Remark
1	2-115-925-11	SCREW (2) (M2X10), TAPPING	
2	2-181-642-01	RING, FRONT GLASS RETAINER	
3	2-181-618-01	GLASS, FRONT	
4	2-181-670-11	RING, O	
5	2-181-670-61	RING, O	
6	2-181-607-01	SCREW, RAIL FITTING	
7	2-181-670-41	RING, O	
8	2-181-605-01	SCREW (M3.5X8)	
9	2-115-906-01	RETAINER, BUCKLE	
10	2-181-670-01	RING, O	
11	2-181-617-01	PACKING, WATERPROOF	
12	*2-181-652-01	PROTECTOR, FRONT	
13	2-181-670-21	RING, O	
14	2-181-616-01	WINDOW, WHITE BALANCE	
15	*A-6767-856-A	HOUSING BLOCK ASSY, FRONT	1-14
16	*A-6767-860-A	HOUSING BLOCK ASSY, REAR	17-25
17	2-115-925-01	SCREW (2) (M2X5), TAPPING	
18	*2-181-615-01	PLATE	
19	2-181-670-51	RING, O	
20	2-181-614-01	WINDOW, LED	
21	2-181-638-01	WINDOW	
22	2-390-778-02	BUCKLE	
23	2-181-639-01	PROTECTOR, REAR	
24	2-181-631-01	FOOT, RUBBER	
25	2-391-514-00	SCREW, + P 3.5	
26	2-115-916-01	COVER, INSERT FITTING SCREW	
27	2-115-930-01	BOLT (M5X8), HEXAGON SOCKET	
28	2-115-935-01	WASHER, W5	
29	2-115-915-01	COVER, GRIP ASSY SCREW	
30	X-2115-903-1	GRIP ASSY	26-29
31	2-115-923-01	SHOE, BRACKET	
32	2-115-929-01	SCREW +K M5	
33	2-115-914-01	COVER, GRIP FITTING SCREW	
34	2-115-931-01	BOLT, HEXAGON SOKET 97	
35	2-115-917-01	WASHER, GRIP FIXED	
36	*2-181-682-01	WEIGHT (A)	
37	*2-181-654-01	BASE, GRIP	
38	2-181-635-01	COVER, GRIP BASE RUBBER	
39	2-181-603-01	WASHER, W6	
40	2-181-604-01	WASHER, SW6 SPRING	
41	2-181-602-01	BOLT, HEXAGON SOCKET	
42	2-181-606-01	SCREW, TRUS	
43	*2-181-664-01	LABEL, CAUTION	
44	*2-181-663-01	LABEL, MODEL NUMBER (E,AUS,AEP,UK Model)	
	2-181-686-01	**LABEL, MODEL NUMBER (US,Canadian Model)**	
45	*2-181-687-01	LABEL (A) (E,AUS,AEP,UK Model)	
001	1-542-114-11	MICROPHONE, UNDERWATER	

(2)



No.	Part No.	Description	Remark
51	*2-181-648-01	RAIL, CAMERA MOUNT GUIDE	
52	2-181-641-01	HOLDER, 8P CONNECTOR	
53	*2-181-679-01	WEIGHT (D)	
54	*A-6767-857-A	REMOTE CONTROL BLOCK ASSY	55,56
55	*2-181-678-01	CASE, REMOTE CONTROL	
56	*2-181-673-01	LID, REMOTE CONTROL CASE	
57	2-181-647-01	LEVER, REC	
58	2-115-924-41	RING, O	
59	2-181-633-01	BEARING (B)	
60	2-181-646-01	LEVER, POWER SWITCH	
61	2-181-670-31	RING, O	
62	2-181-632-01	BEARING (A)	
63	2-181-609-01	SPRING (A)	
64	X-2181-603-1	FUNCTIONING PLATE ASSY, POWER SWITCH	
65	7-682-147-15	SCREW +P 3X6	
66	7-621-255-85	SCREW +P 2X14	
67	*2-181-643-01	COVER, POWER SWITCH	
68	7-621-255-32	SCREW +P 2X5	
69	X-2181-604-1	BASE ASSY, REC SWITCH	
70	2-181-627-01	PLATE, FUNCTION, REC SWITCH	
71	2-181-610-01	SPRING (B)	
72	2-181-608-01	SCREW, FUNCTION PLATE FITTING	
73	7-621-255-55	SCREW +P 2X8	
74	*2-181-644-01	COVER, REC SWITCH	
75	7-682-147-09	SCREW +P 3X6	
76	1-520-502-11	DISPLAY ASSY, REC	
77	7-682-249-09	SCREW +K 3X10	
78	2-181-680-01	CUSHION (A), RUBBER, SCREW	
79	2-181-685-01	CASE, CONNECTOR RETAINER	
80	2-181-674-01	RETAINER, CONNECTOR	
81	*2-181-651-01	CAMERA MOUNT	
82	*2-181-634-02	PLATE, GUIDE, RAIL	
83	2-391-512-00	RING (5), RETAINING, E TYPE	
84	2-181-601-01	WASHER, BASE FIXED SCREW	
85	2-181-612-01	SCREW, BASE FIXED	
86	2-181-629-01	SHAFT, AUTO LOCK RELEASE LEVER	
87	2-181-611-01	SPRING (C)	
88	2-181-636-01	LEVER, RELEASE, AUTO LOCK	
89	X-2181-609-1	LEVER ASSY, AUTO LOCK	
90	2-181-623-01	STOPPER (C)	
91	7-682-247-09	SCREW +K 3X6	
92	*2-181-681-01	GUIDE, CAMERA MOUNT	
93	2-181-671-01	SPRING	
94	2-181-677-01	LEVER, LOCK	
95	2-181-676-01	PLATE, LOCK	
96	2-181-672-01	SHAFT, LOCK LEVER	
97	2-181-605-01	SCREW (M3.5X8)	
98	X-2181-602-1	BASE, ASSY POWER SWITCH	
99	2-115-932-01	RING (6), E	
100	2-181-689-01	RUBBER, CAMERA MOUNT	
101	2-181-688-01	PLATE, INDICAT	
001	1-553-636-00	SWITCH, MICRO	
002	1-553-636-00	SWITCH, MICRO	
003	1-553-636-00	SWITCH, MICRO	

SECTION 4
ELECTRICAL PARTS LIST

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference frome the original one.
- SEMICONDUCTORS
  In each case, U: μ, for example:
  UA....: μA...., UPA....: μPA....,
  UPB....: μPB...., UPC....: μPC....,
  UPD....: μPD....
- CAPACITORS
  MF: μF, PF: μμF
- COILS
  MMH: mH, UH: μH

Ref.No	Part No.	Description	Remark
		REMOCON BOARD	
		**********	
	1-574-255-11	CABLE, REMOTE CONTROL (A) (CCD-V90/V9)	
	1-574-256-11	CABLE, REMOTE CONTROL (B) (CCD-F340/F40/SP5/SP7)	
	2-181-680-01	CUSHION (A), RUBBER, SCREW (CCD-F340/F40/SP5/SP7)	
	2-181-680-11	CUSHION (B), RUBBER, SCREW (CCD-V90/V9)	
		CAPACITOR	
C001	1-124-234-00	CAP, ELECT 22MF	
C002	1-102-129-00	CAP, CERAMIC 0.01MF B	
C003	1-126-094-11	CAP, ELECT 4.7MF	
C004	1-102-110-00	CAP, CERAMIC 220PF B	
C005	1-102-110-00	CAP, CERAMIC 220PF B	
C006	1-124-255-00	CAP, ELECT 1.0MF	
C007	1-124-234-00	CAP, ELECT 22MF	
C008	1-124-255-00	CAP, ELECT 1.0MF	
C009	1-126-157-11	CAP, ELECT 10MF	
C010	1-126-157-11	CAP, ELECT 10MF	
		PLUG	
CNP001	1-556-757-21	CORD (WITH PLUG)	
		DIODE	
D001	8-719-109-84	DIODE RD5.1ESB1	
D002	8-719-911-19	DIODE 1SS119	
D003	8-719-911-19	DIODE 1SS119	
D004	8-719-911-19	DIODE 1SS119	
D005	8-719-911-19	DIODE 1SS119	
D006	8-719-911-19	DIODE 1SS119	
D007	8-719-911-19	DIODE 1SS119	
D008	8-719-911-19	DIODE 1SS119	
D009	8-719-911-19	DIODE 1SS119	
D010	8-719-911-19	DIODE 1SS119	
D011	8-719-911-19	DIODE 1SS119	
D012	8-719-911-19	DIODE 1SS119	
D013	8-719-911-19	DIODE 1SS119	
D014	8-719-911-19	DIODE 1SS119	
D015	8-719-812-31	TLR123	
		IC	
IC001	8-759-142-56	IC UPD7503G-A71-12	
IC002	8-759-240-69	IC TC4069UBP	
IC003	8-759-240-24	IC TC4024BP	
IC004	8-759-245-38	IC TC4538BP	
IC005	8-759-913-41	IC S-8054ALB	
		MICROPHONE	
MIC001	1-542-114-11	MICROPHONE, UNDERWATER	
		TRANSISTOR	
Q001	8-729-900-89	TRANSISTOR DTC144ES	
Q002	8-729-178-54	TRANSISTOR 2SC2785-F	
Q003	8-729-900-89	TRANSISTOR DTC144ES	
Q004	8-729-900-89	TRANSISTOR DTC144ES	
Q005	8-729-900-65	TRANSISTOR DTA144ES	
Q006	8-729-900-89	TRANSISTOR DTC144ES	
Q007	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q008	8-729-178-54	TRANSISTOR 2SC2785-F	
		RESISTOR	
R001	1-249-409-11	RES, CARBON (SMALL) 220	
R002	1-249-429-11	RES, CARBON (SMALL) 10K	
R003	1-249-437-11	RES, CARBON (SMALL) 47K	
R004	1-249-441-11	RES, CARBON (SMALL) 100K	
R005	1-249-437-11	RES, CARBON (SMALL) 47K	
R006	1-249-429-11	RES, CARBON (SMALL) 10K	
R007	1-249-441-11	RES, CARBON (SMALL) 100K	
R008	1-249-441-11	RES, CARBON (SMALL) 100K	
R009	1-249-429-11	RES, CARBON (SMALL) 10K	
R010	1-249-429-11	RES, CARBON (SMALL) 10K	
R011	1-249-429-11	RES, CARBON (SMALL) 10K	
R012	1-249-429-11	RES, CARBON (SMALL) 10K	
R013	1-249-429-11	RES, CARBON (SMALL) 10K	
R014	1-249-429-11	RES, CARBON (SMALL) 10K	
R015	1-247-903-00	RES, CARBON (SMALL) 1.0M	
R016	1-247-883-00	RES, CARBON (SMALL) 150K	
R017	1-247-883-00	RES, CARBON (SMALL) 150K	
R018	1-249-441-11	RES, CARBON (SMALL) 100K	
R019	1-249-413-11	RES, CARBON (SMALL) 470	
R020	1-249-441-11	RES, CARBON (SMALL) 100K	
R021	1-247-891-00	RES, CARBON (SMALL) 330K	
R022	1-247-891-00	RES, CARBON (SMALL) 330K	
R023	1-249-441-11	RES, CARBON (SMALL) 100K	
R024	1-249-441-11	RES, CARBON (SMALL) 100K	
R025	1-247-840-00	RES, CARBON (SMALL) 2.4K	
		SWITCH	
S001	1-553-636-00	SWITCH, MICRO	
S002	1-553-636-00	SWITCH, MICRO	
S003	1-553-636-00	SWITCH, MICRO	
		CRYSTAL	
X001	1-527-532-00	OSCILLATOR, CERAMIC	

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ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
X-2181-605-1	FINDER ASSY	
X-2181-606-1	PEDESTAL (F340/F40) ASSY	
X-2181-607-1	PEDESTAL (SP5/SP7) ASSY	
X-2181-608-1	PEDESTAL (V90/V9) ASSY	
2-115-921-01	GREASE	
2-181-617-01	PACKING, WATERPROOF	
*2-181-656-01	INDIVIDUAL CARTON (AEP,UK,E,Australian Model)	
*2-181-656-11	INDIVIDUAL CARTON (US,Canadian Model)	
*2-181-657-01	CUSHION (UPPER)	
*2-181-658-01	CUSHION (LOWER)	
*2-181-669-01	CONVERSION LENS	
2-181-670-01	RING, O	
2-181-680-11	CUSHION (B), RUBBER, SCREW (CCD-V9,V90E)	
3-786-438-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH)	
3-786-438-51	MANUAL, INSTRUCTION (GERMAN/DUTCH/ITALY)	
3-786-438-61	MANUAL, INSTRUCTION (ARABIC)	

HARDWARE LIST

SCREW

7-621-255-40	SCREW +P 2X6	
7-621-255-55	SCREW +P 2X8	
7-621-255-85	SCREW +P 2X14	
7-682-147-09	SCREW +P 3X6	
7-682-147-15	SCREW +P 3X6	
7-682-249-09	SCREW +K 3X10	

9-972-700-11

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